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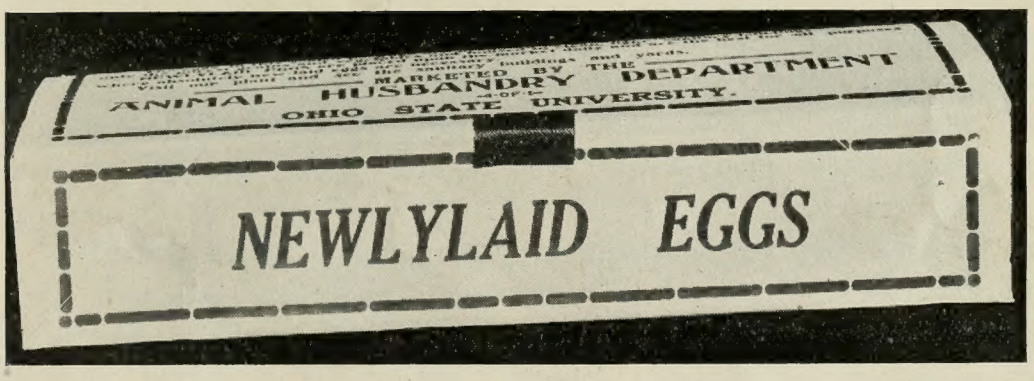
Care of Eggs for Market

By

M. C. KILPATRICK



THE OHIO STATE UNIVERSITY, COLUMBUS, OHIO

AGRICULTURAL COLLEGE EXTENSION SERVICE

CLARK S. WHEELER, *Director*

CARE OF EGGS FOR MARKET

The production of eggs for market is becoming of greater importance in Ohio every year, both as a source of revenue and as a source of the national food supply. The demand for eggs is rapidly increasing. This increased demand is due largely to an increase in the consuming population. It is also due in part to an increase in the per capita consumption of eggs caused by a growing appreciation of their value as food and a more general substitution of eggs for meats on account of the increased price of the latter.

Increased demand for eggs has been accompanied by an increase in their cost to the consumer and a demand on the part of the consumer for a product of higher quality. This demand for higher quality, together with the requirements of the pure food laws of the State and Federal governments, has made it necessary for the poultryman to study carefully the factors which determine the market value of eggs, to produce eggs of better quality and to handle them with better care, in order that they may reach the consumer with a minimum of deterioration and loss.

Improvement in the quality of market eggs and the care with which they are handled is as important to the producer as is increased production. The production of eggs of better quality and the introduction of better methods of handling will eliminate the enormous loss in price because of the poor quality of a large number of the eggs marketed; it will eliminate the loss in transportation charges on worthless eggs; it will make unnecessary the large army of graders, and candlers now required to sort the good from the bad and prepare them for market; and it will increase consumption, because of the elimination of doubtful eggs.

FACTORS WHICH DETERMINE THE MARKET VALUE OF EGGS

The market value of eggs is determined by freshness and interior quality, size, shape, color, cleanliness, condition of shell, uniformity, the appearance of the packages in which they are marketed, and the season of the year during which they are produced. All of these factors may be controlled to a considerable degree thru breeding of the flock and the care with which the eggs are handled.

Freshness and Interior Quality.—The term fresh is almost universally used to designate eggs of desirable quality, because of the readiness with which eggs spoil. This term is often applied generally to all eggs that have not been in cold storage or subjected to any other process of preservation. Freshness however, depends more on the care with which eggs have been handled than on their actual age. An egg kept under unfavorable conditions for 48 hours may lose its fresh qualities and become unfit for food, while an egg kept under favorable conditions for several weeks may still be fresh and of excellent quality.

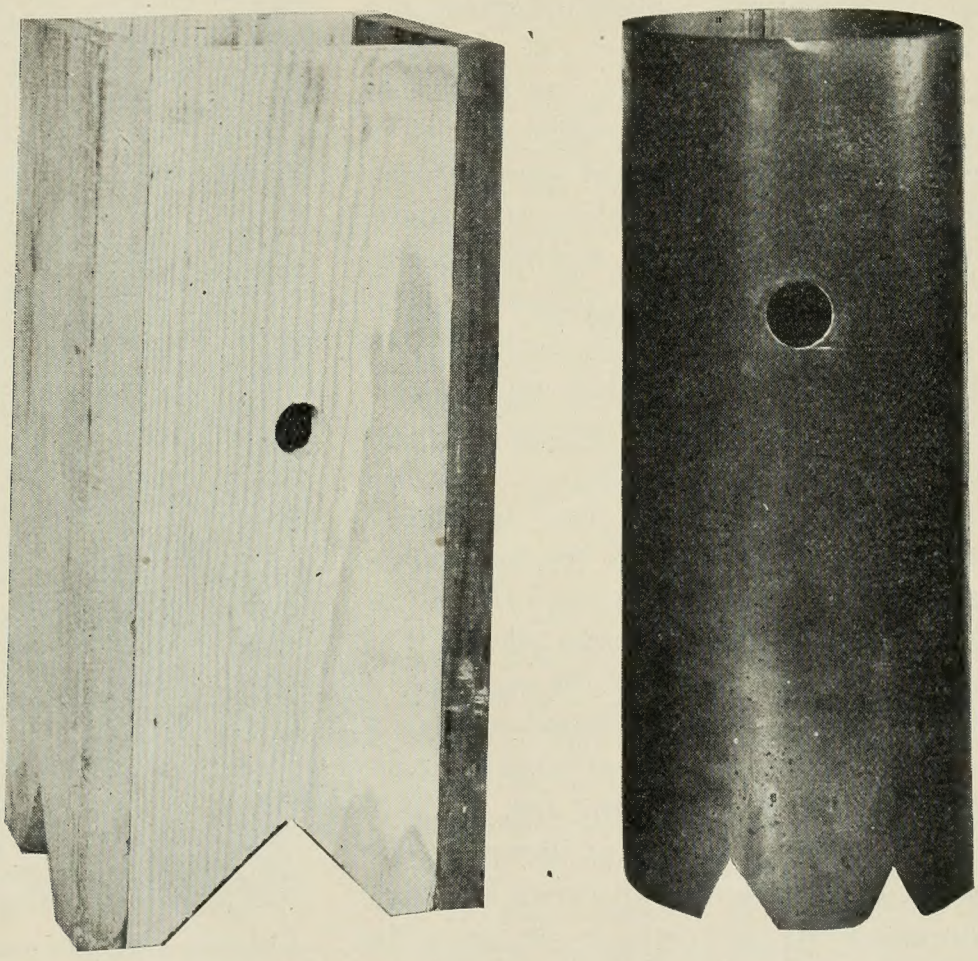
The size, shape, color, cleanliness, condition of shell, and uniformity of eggs may be determined by their outward appearance. Freshness and interior quality can be determined only by candling. Candling is the process by which the contents of the egg shell is made visible by rotating the egg before a strong light. By this process, the experienced egg candler can eliminate all eggs of undesirable quality and grade the good eggs according to their interior quality with remarkable accuracy.

Many devices may be used for candling eggs. The simplest method is to candle by daylight using a tube, or roll of paper, approximately 1¼ inches in diameter. An egg is held at one end of the tube and the other end is placed closely over the eye. By holding the egg so that the sunlight strikes it, its interior quality may be determined. This simple method may be used to good advantage on the farm. By its use, the marketing of bad eggs or eggs of poor quality may be avoided.

If many eggs are to be candled at one time, some device which may be lighted artificially should be used. Either a kerosene or electric light may be used. Electric light is preferable, since the kerosene light is yellow making it impossible to determine accurately the appearance of a heated egg.

A piece of stove pipe or a box approximately 8 inches square and 15 inches high fitted over a kerosene lamp forms a simple tester. A hole approximately 1¼ inches in diameter is cut in one side just

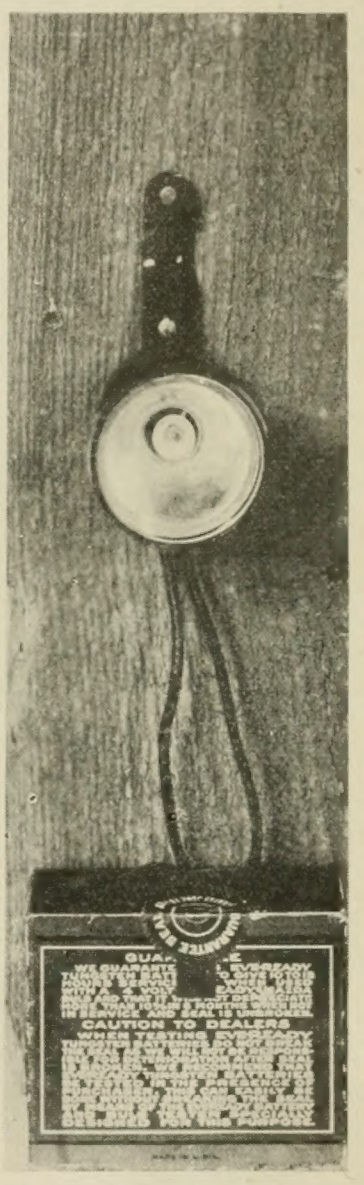
opposite the flame. A piece of bright tin or a polished reflector should be placed immediately behind the flame. A number of small holes should be cut around the bottom edge for ventilation. A candle of this type must be used in a darkened room. By holding an egg against the hole in the side of the box or pipe, the contents of the shell are made visible. A small electric head light similar to those used on bicycles may be used in place of the kerosene lamp. The head light is fastened to a block of wood so that it is held opposite the candling hole. A 4-volt lamp and battery furnishes sufficient light for ordinary candling.



Satisfactory candles for use with a kerosene lamp may be made of a small box or of a piece of stove pipe

A candle for use with an electric light is shown on page 9. It consists of a ventilated can with a movable top and an extension on one side which forms the candling hole. It is adjustable to the height of the candler by the slide on the rod which is fastened to a shelf. Holes in the bottom and the hooded holes near the top throw the light down into the cases. The cover is easily removed to allow clean-

ing the lamp. It contains a short tube to prevent the escape of light around the electric bulb socket. The spout covering the candling hole prevents the operator from looking directly into the light. The candle is painted black on its lower inside half so that the light is not reflected into the eyes of the candler. The upper inside half of the candle is of polished tin to reflect the light thru the hole. A 40-watt white light is advisable for a candle of this type. This candle was designed by the Ford Research Laboratory of the United States Department of Agriculture, especially for commercial use.

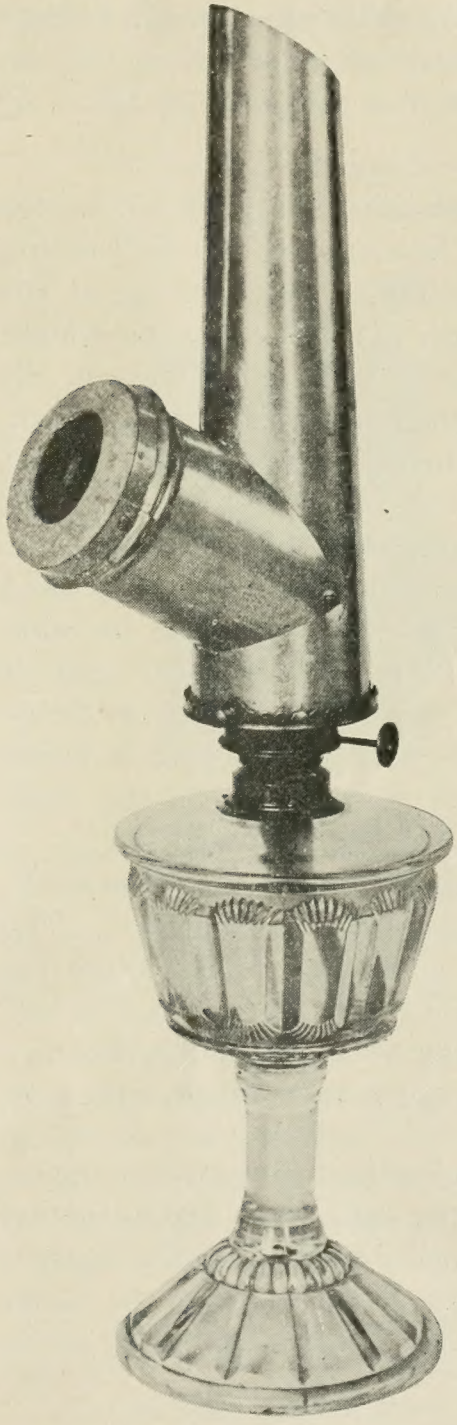


A bicycle headlight outfit may be used instead of a lamp

The Bureau of Chemistry of the United States Department of Agriculture has listed a number of different types of eggs and decribed their appearance before the candle and out of the shell. The more important of these are described in the following paragraphs. Acquaintance with these various grades and accuracy in grading eggs according to their interior quality can be obtained only by practice in candling.

When a **fresh egg** of good quality is examined before the candle, the contents of the shell will be found to practically fill it, little evaporation having taken place. The air space in the large end of the egg will be small, not much larger in diameter than a dime. The yolk will appear dimly visible at or above the middle of the egg. It will move slowly when the egg is turned. The germinal spot will not be discernible. Any development of the embryo destroys the freshness of an egg and may render it unfit for use as food. The white of the egg will be clear. In order to be graded as fresh, an egg should be entirely free from foreign substances within the shell such as blood spots or molds. The shell of a fresh egg is usually dull.

Out of the shell, the white of a fresh egg is firm and thick. Two distinct layers of white are discernible. The outer layer may be somewhat watery, but the inner layer is thick and viscous. The yolk is spherical and firm, extending well above the inner layer of white. The yolk membrane is strong permitting the yolk to be picked up and separated from the white without breaking. The germinal disc, found at or near the top of the yolk, is small showing no sign of hatching.



An egg tester of the type furnished with incubators may be used for candling

A stale egg before the candle shows a large air space which may be movable in outline. The yolk is plainly visible at or below the middle of the egg. It moves quickly when the egg is turned because the white is thin and watery.

The white of the stale egg out of the shell is watery with little thick white. It does not reflect the light like a fresh egg. The yolk is flattened, somewhat enlarged and sometimes mottled with spots of deeper color. The germinal disc may be either small or enlarged. The yolk membrane is weak making it difficult to pick up the yolk without breaking it.

An egg becomes stale because of long holding after it is laid, allowing excessive evaporation and the breaking down of the structure of the white. The yolk absorbs water from the white. This form of deterioration is found most commonly during the fall of the year. The only method of prevention is to market the eggs promptly.

A heated egg before the candle shows the yolk to be plainly visible, having a distinct reddish glow. The yolk moves rapidly when the egg is turned. The white is thin. Out of the shell, the yolk membrane is weak, especially around the germinal disc which is enlarged and shows signs of incubation.

Heated eggs are common during the hatching season and warm weather. Very few fertile eggs reach the market during hot weather without showing some signs of heat. This condition occurs only in fertile eggs that have been exposed to a temperature above 68 degrees F. At this temperature the process of incubation begins. If the temperature is high enough and sufficient time elapses, the development will continue until the embryo has formed. The egg then will be unfit for use as food. This condition may be avoided by producing only infertile eggs or by keeping fertile eggs at a temperature below 68 degrees F.

Eggs with bloody white are found infrequently at all seasons of the year. They are most prevalent in late summer and early spring when the pullets begin to lay. This condition exists in the egg at the time it is laid. It is due to a slight rupture in the ovary or the oviduct which permits blood or a portion of tissue to become included in the white of the egg as it is formed. No method of prevention is known. When an egg of this type is held before the candle, the small spot or spots may be easily seen. In most cases the blood spots are small. In severe cases the egg will present a general bloody or spotted appearance.

Stale eggs which have been held without turning often present condition known as **stuck yolk**. It is most common during the summer and autumn. Upon candling, the yolk of an egg of this type is found to be attached to the shell. It may wave but cannot move freely when the egg is turned. When the egg is broken, the yolk is found to be flattened and hardened at the place of contact with the shell. The yolk membrane usually breaks when the egg is opened.

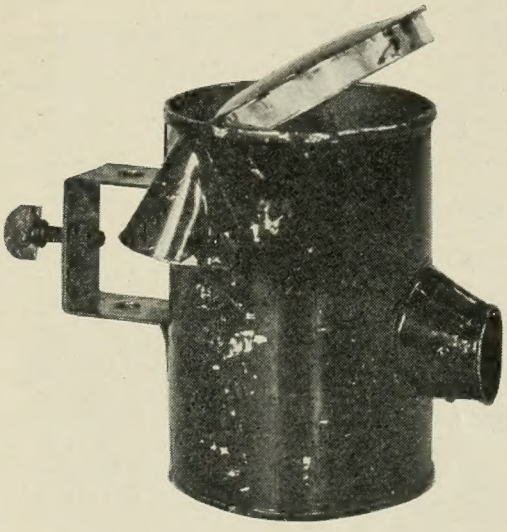
The air space in an egg with a **blood ring** be either large or small, because this condition may be found in eggs only a few days old. The white is usually thin. The yolk, which is plainly visible before the candle, shows a distinct bloody ring or the portion of ring on its surface. Sometimes the lower portion of the yolk shows as a shadowy crescent which moves quickly when the egg is rotated before the candle.

Blood rings are the principal source of loss during the summer. The blood ring can develop only in a fertile egg. It is due to the development of the embryo until blood has formed followed by the death of the embryo. Immediately after the death of the embryo, the blood ring forms. It should not be confused with the egg with bloody white previously described.

Moldy eggs show black spots of varying sizes on the inside of the shell or brown or black particles adhering to the shell membrane. Mold is frequently found in cracks in the shell. The yolk and white of a moldy egg are usually mixed showing particles of mold.

Moldy eggs are found at all seasons of the year but are most frequent during the fall. They are caused by wet nests, holding the eggs in damp places, washing dirty eggs or allowing the egg to become wet, thus permitting the mold spores to enter thru the pores of the shell. Mold may also enter thru cracks in the shell.

The **white rot egg** is similar in its appearance before the candle to a fresh egg. However the air space is usually large and the white and yolk are mixed, giving a yellowish color to the contents of the shell. A white rot has a very unpleasant odor. Bacterial decomposition following advanced staleness is the principal cause.



An electric light used in a candle of this type furnishes a strong white light for candling

The **black rot** is caused by the development and death of the embryo or the growth of mold within the shell accompanied by bacterial decomposition. The contents of the shell are mixed, appearing black or muddy before the candle. Out of the shell the color is gray, green, or yellow. The black rot frequently contains a decomposed embryo, advanced development of the embryo having taken place before death. A strong, repulsive odor is characteristic of the black rot.

Black rots, white rots, moldy eggs, blood rings, and most eggs with **stuck yolks** are **unfit for use as food.** Eggs with bloody whites may be marketed as culls if the blood spots are small. Eggs with large clots of blood or large pieces of tissue in the white should be discarded. Stale eggs and heated eggs may be used for the table, but are of inferior quality.

Size.—The second factor which influences the market value of eggs is size. The larger the egg, the greater the food value per dozen.

Large eggs have a more attractive appearance and appeal to the eye of the buyer more than small eggs.

A weight of 2 ounces each, 24 ounces to the dozen, 45 pounds net to the 30-dozen case is regarded as standard for first quality eggs in practically every market in the United States. Fancy eggs should weigh 2¼ ounces each, 27 ounces to the dozen, or approximately 50½ pounds net to the case. Eggs which weigh less than 2 ounces each are too small to grade as firsts. Eggs weighing more than 2½ ounces each are too large to carry to market safely in standard egg packages.

Shape.—Shape affects the market value of eggs, because of its influence on their appearance. It also affects the breakage of eggs during transportation. Eggs for market should be of a true egg type. Exceptionally long eggs and very short, rounded eggs are equally objectionable. Malformed or freak eggs should never be used for incubation or sent to market.

Color.—The color of the shell of an egg does not affect its food value. White and brown eggs produced under the same conditions have essentially the same composition. The color of the shell does affect the market value, however, because of its appearance. The preference shown in different markets for eggs of certain colors or shades of color are due to custom and the appeal of these colors to the eye of the buyer. The grading of eggs on the basis of color should be governed by the requirements of the market.

White eggs should be chalk white, free from any tint. The best markets will not grade as firsts or fancy any eggs showing a tint of any color altho it be slight. White eggs having a dull appearance are preferred.

Brown eggs should be of a medium shade of brown. The color should be uniform over the entire shell. Uniformity of color is more important than the exact shade of color. White and brown eggs should not be marketed together.

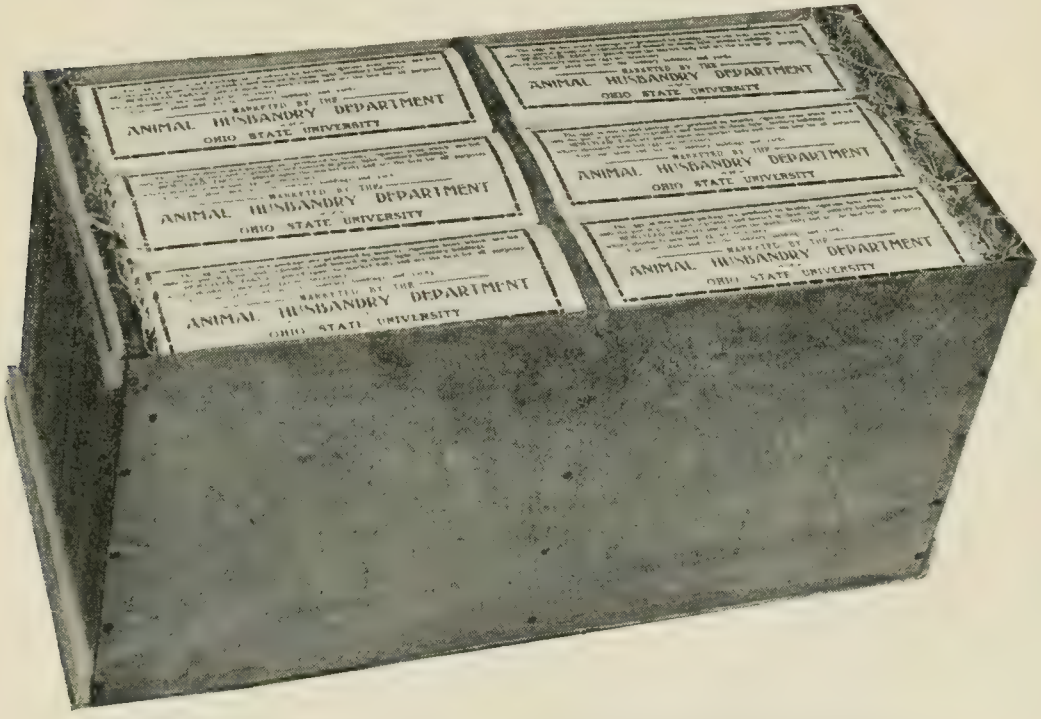
Cleanliness.—Dirty and stained eggs, altho newly laid and of good size and interior quality are always a partial loss. The egg shell is very porous and any filth with which it comes in contact soon finds its way thru the shell into the egg. Eggs which are only slightly stained or soiled may be included in the lower grades, but very dirty eggs should never be sent to market. A few dirty and stained eggs in a large lot injures the sale and lowers the market value of the entire lot.

Condition of Shell.—Eggs for market should have clean, smooth strong shells which are free from ridges, cracks, transparent spots or lime deposits. The principal shell defects in market eggs are known as blind checks, checks, cracks, dents, and leakers.

The shell of an egg with a **blind check** has the appearance of having been broken in the hen and mended by an additional layer of shell material. Blind checks are usually found only by candling.

In the case of a **check** the shell is cracked but the break is not apparent. Checks may be discovered by candling or by clicking two or more eggs together. When clicked, the eggs will give a deadened sound which is distinctly different from the clear ring of sound eggs.

If the egg defect is a **crack** the break in the shell can be seen, but the contour of the egg is not disturbed. The break is not sufficient to permit the contents of the shell to escape.



Thirty 2 by 6 cartons packed neatly in a standard 30-dozen case

With a **dent** the shell is pushed in changing the contour of the egg but the membranes are not broken.

When the shell and membranes are so badly broken that the contents of the egg escape, the egg is known as a **leaker.**

Uniformity.—Uniformity in size, shape, color and quality adds to the market value of eggs. It adds to the appearance of the lot and makes a better impression on the buyer. Uniformity is important whether the lot be a dozen, a case or a car-load.

Egg Packages.—A neat attractive package adds to the appearance of eggs. Neatly printed cartons may be used to good advantage for a private trade. The 2 by 6 carton, two eggs wide and six eggs

long, illustrated on front cover, is most convenient. Thirty cartons of this type pack neatly in a standard 30-dozen egg case. Blue lined cartons are best for white eggs and white or gray lined for brown eggs. The principal advantages of the carton are that the eggs are sent to market in a convenient package easily handled by the purchaser. The eggs may be more closely graded and the lot made more uniform, and the package, if neatly printed, serves as a good advertisement for the producer. When cartons are used, they should carry the name and address of the producer, a brief statement to the effect that the eggs are new-laid and have been produced by purebred hens kept under sanitary conditions and fed on clean, wholesome food. The net weight of the eggs when packed, and a guarantee of their quality should also be given. No dates or marks should be placed on the eggs. The carton may be sealed and the date on which the eggs were laid placed on the seal.

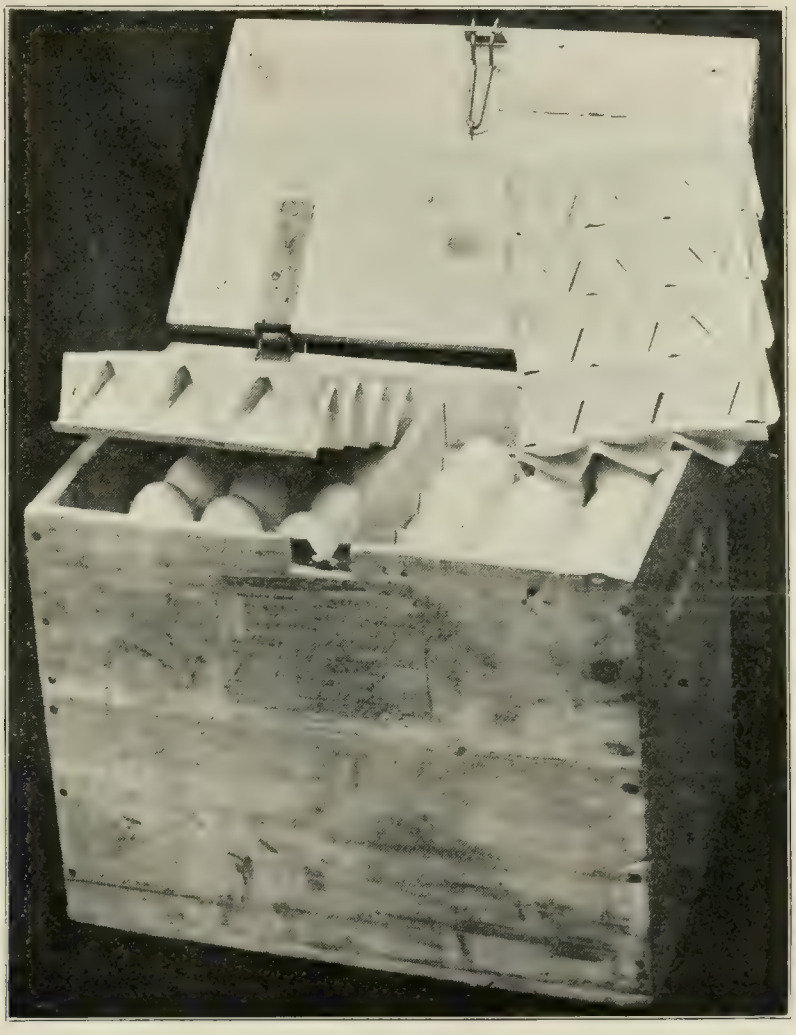
If eggs are marketed thru a local shipper or shipped directly to a wholesale dealer, jobber, commission merchant or retailer, standard egg cases should be used. Sufficient fowls should be kept on every farm in Ohio to enable the producer to ship at least one case of eggs a week during the greater part of the year. The standard 30-dozen egg case should be used. If less than 30 dozens are marketed each week, half cases holding 15 dozens or special cases holding 6 or 12 dozens each should be used. Boxes, buckets and baskets should never be used for marketing eggs.

Eggs should be carefully packed for shipment or hauling to market. Much of the loss due to breakage would be eliminated if greater care were used in packing. The dividing boards and trays, or *fillers* and *flats* should be of good quality. These are graded as *No. 2*, *Medium*, *3 pound*, and *No. 1*, according to their weight. The "3 pound" or "No. 1" grades should be used.

The railroad companies require that a cushion of excelsior, cork, corrugated strawboard or cut straw be used in the bottoms and on the tops of the cases. Excelsior is most commonly used for this purpose. The bottom cushion should be approximately ½ inch thick, evenly distributed over the bottom of the case with a little extra in the corners. The top cushion should be of sufficient thickness to fill the extra space above the last layer of eggs, but not enough to crowd them unduly. It should be evenly distributed over the top of the case. A bunch of excelsior or other packing material in the middle of the egg space does not protect the eggs. Dividing boards or flats should be used between the excelsior and the eggs. An egg case properly packed is tight but springy and will stand rather severe shocks without damage to the eggs.

If eggs are shipped by parcel post, each egg should be wrapped in paper and special packages made to conform to the rulings of the postal authorities should be used.

Season.—The production of eggs varies with the season, causing a wide variation in the market value of newly-laid eggs during the year. Approximately one-half of the eggs produced during the year are laid during March, April, May, and June. The supply during these



A 6-dozen case permits the man with a small flock to make frequent shipments

months is greatly in excess of the demand for eggs for immediate use. Fortunately for the egg producer, however, eggs are subject to preservation in cold storage. Were it not for the cold storage of eggs, the price would be prohibitive for the average consumer, during the winter and so low during the season of greatest production as to make the production and marketing of eggs unprofitable.

The influence of cold storage is not sufficient, however, to maintain a uniform price thruout the year. Eggs produced during the winter months are worth from 50 to 150 percent more than those laid during March, April, May, and June. The poultry man should endeavor so to handle his flock that an increased percentage of the total egg yield is produced during the months of October to February inclusive. This may be accomplished by paying greater attention to the breeding of the fowls, their age, the time at which they are hatched, the care with which they are fed and handled and the way in which they are housed.

IMPROVING THE QUALITY OF MARKET EGGS

To produce and market eggs of prime quality, it is necessary for the poultryman to follow closely the suggestions which are made in the following paragraphs. It requires but little additional care and attention on the part of the poultryman to insure the best quality of the eggs he sends to market.

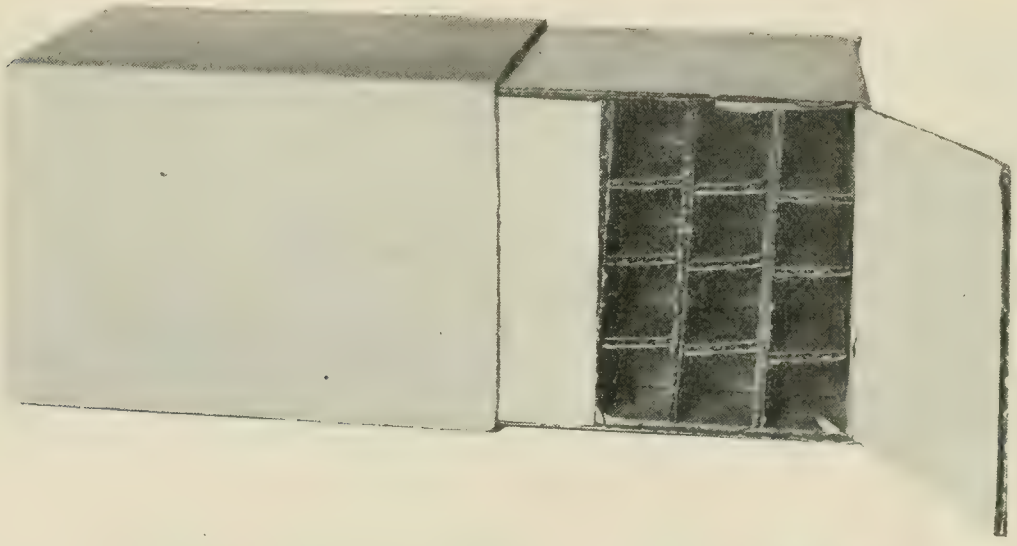
Breeding.—Breed only from hens that are known to produce eggs of the desired size, shape and color. All of these characters are hereditary. The selection of eggs for incubation of good size, shape and color continued thru several seasons will result in marked improvement.

Feeding.—Provide clean, wholesome food for the hens. Avoid highly flavored foods. Supply an abundance of grit and oyster shell to aid in the production of strong shells. The quality of the food has a decided influence on the color of the yolk. A ration carrying a large proportion of yellow corn and succulent green food will produce yolks which are dark reddish in color. A ration made up principally of wheat and oats with little or no green food will produce yolks that are very pale in color. A rich golden color is preferred. Certain foods such as onion, celery, and some animal foods will impart an objectionable flavor to the eggs.

Cleanliness.—Avoid dirty eggs by keeping the nests, house and yard clean. One clean, dry, well ventilated nest should be provided for every five hens. The floor of the house should be covered at all times with a litter of clean straw, chaff or shavings to a depth of from 6 to 12 inches. This litter should be renewed whenever it becomes damp, dusty or soiled by the droppings. Dropping boards should be provided under the roosts and the droppings removed at least once each week. Bare, muddy yards should be avoided. If it is impossible to

maintain a good growth of grass, clover, alfalfa or other forage crop in the yards, the hens should be confined to the house until noon on wet, muddy days. The hens should not be allowed to range or make nests in the barnyard or to forage on the manure pile. The egg shell is porous and the egg is easily contaminated.

It is impossible to make eggs clean by washing. Washed eggs spoil more quickly than if left in their natural condition. Washing removes the mucous coating which prevents the entrance of bacteria and molds. It spoils the appearance of the newly-laid egg and opens the pores so that evaporation is more rapid. Examination of washed and unwashed eggs of the same degree of dirtiness showed 500 percent more bacteria in washed than in the unwashed eggs. Washed eggs will not keep well in cold storage. An expert grader can readily detect washed eggs and when found, they are classed as **dirties.**



Special packages are necessary for parcel post shipments
Each egg in the package must be wrapped in paper

Handling.—Eggs should be handled carefully from the time they are laid until they are marketed, because an egg is at its best when laid. Nothing can be done to improve the quality of eggs or restore quality when lost. They should be gathered at least once daily. If the flock is large, gather the eggs from two to four times daily, especially during hot weather. Confine all broody hens to small coops as soon as found. If any are wanted for hatching, transfer them immediately to the hatching room or coop.

Handle eggs as little as possible. Every time eggs are handled, the liability of breakage and contamination is increased. In gathering eggs, use a covered pail to protect the eggs from rain, dust and the direct rays of the sun. Place 3 or 4 inches of clean straw or excelsior

in the bottom of the pail to prevent breakage. As soon as gathered, transfer the eggs to a cool dry place to prevent shrinkage, mold, and the development of the embryo. The eggs should be held at a temperature below 70 degrees F. because a low temperature is one of the most important factors in getting eggs to market in good condition.

Cool eggs thoroly before packing them into fillers, cartons or boxes. The egg shell is a good insulator, and if a warm egg is placed in a standard egg-case filler, which is also a good insulator, and covered, the animal heat will be retained for several hours. Place the newly-laid eggs in a wire basket or on a wire rack which will permit a good circulation of air around them and allow them to cool over night. A wire waste basket or a rack or shelf similar to an incubator tray may be used. Grade and pack the eggs the following morning.

Eggs should be cooled thoroly before packing in cases or cartons

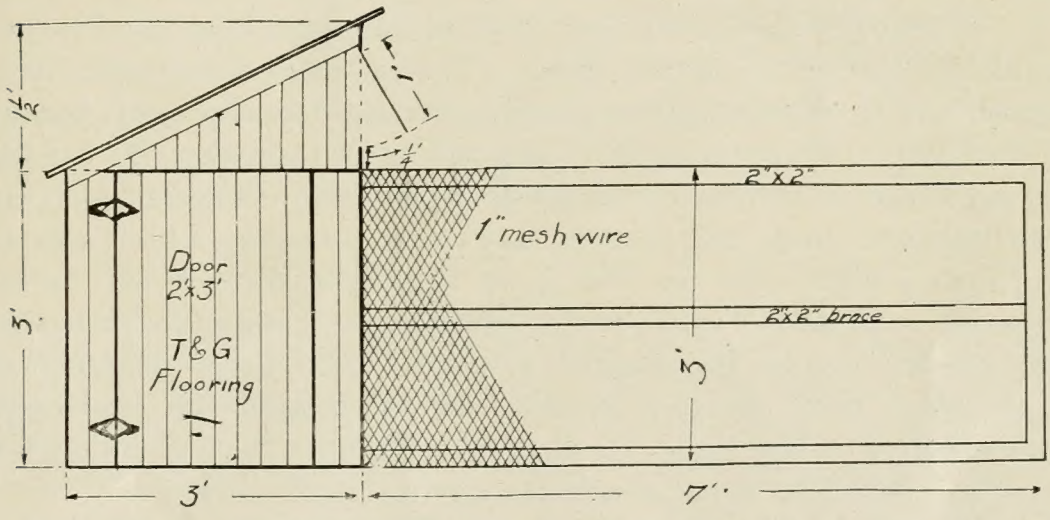
Keep eggs away from bad odors. The egg absorbs odors readily and if subjected to objectionable odors will quickly lose its fresh qualities. Medicated nest eggs should never be used. The egg absorbs odors readily and if subjected to objectionable odors will quickly lose its fresh qualities.

Market eggs once each week. Marketing two or three times each week during hot weather is advisable if the supply of eggs is large enough to justify the practice.

Handle eggs carefully during transportation from the farm to market or to the shipping point. Protect the eggs from jarring when hauled over rough roads and cover the case so that it cannot become wet during rainy weather and protect the egg case from the direct rays of the sun.

Infertile Eggs.—Produce and market only infertile eggs. The male has no influence whatever on the number of eggs produced. His usefulness is limited to the breeding season and then only with a few carefully selected hens. The presence of the male in the flock lowers the value of the eggs produced, because fertile eggs deteriorate very rapidly during warm weather. The development of the embryo begins at a temperature of 68 degrees F. A temperature of 85 degrees for 3 or 4 days or a temperature of 100 degrees for 24 hours may cause sufficient development of the embryo to make the egg unfit for use as food. An infertile egg may be subjected to a temperature of 100 degrees for 1 week or 10 days and still be perfectly good for cooking purposes.

Investigations conducted by the Bureau of Animal Industry of the United States Department of Agriculture show that the total loss of fertile eggs is nearly twice that of infertile eggs regardless of how the eggs are handled. The increased loss of fertile eggs is due mainly to the development of blood rings and rots which can occur only in fertile



Portable coops with covered runs should be provided for the male birds during the summer

eggs. This loss may occur even when the eggs receive reasonably good treatment; practically the only depreciation of infertile eggs aside from breakage was a slight shrinkage. This loss of fertile eggs, which amounts to many millions of dollars in the United States every year, can can be prevented by removing the males from the flock as soon as the breeding season is over.

A male which is worth using as a breeder is worth taking care of. Do not kill a good breeder unless you are certain you will have no further use for him. When removed from the breeding pen, confine him to sepa-

rate quarters where he can be kept comfortable and be well cared for. He will be a better breeder the following season if this is done. Males which are not to be kept for future use as breeders should be sent to market as soon as the breeding season is over.

GRADING OF EGGS

One of the most important factors which hinders improvement in the quality of market eggs is the case-count method of buying. Under this system, which unfortunately prevails in practically all Ohio markets, all eggs are regarded as of equal value and payment is made on the basis of a uniform price per dozen regardless of quality. Investigations recently made by the Bureau of Animal Industry show that approximately 18 percent of all eggs marketed are a partial or total loss when they leave the farm. Approximately 65 percent of the loss occurs on the farm. A good share of the loss occurring during transportation and handling in the market is due to factors under the control of the producer.

Under the case-count method of buying eggs, individual responsibility for this loss cannot be fixed. The producer who markets eggs of good quality is penalized for so doing instead of encouraged, because he receives a lower price for his good eggs to make up for the bad eggs sent to market by his careless neighbor. The bad eggs are not eliminated until well on their way to the consumer who is compelled to pay a high price for the good eggs he receives to pay for the increased expense for cases, transportation and handling of worthless eggs allowed to enter the channels of trade. The dealer who buys on a case-count basis incurs a needless risk for himself and encourages the marketing of bad eggs. If dealers would stop buying bad eggs at any price, bad eggs would soon disappear from the market.

In certain sections of the state, the loss-off method of buying is in force during the hot months. Under the loss-off system, eggs are candled at the time of purchase and only good eggs are paid for. Where this method has been followed in buying eggs from producers, immediate improvement in the quality of the eggs marketed has resulted and buyers have been able to pay a higher price.

Buying on a loss-off basis is only a partial remedy, however. There are marked differences in the quality of eggs which are marketable under the loss-off system. These differences in quality should be considered when eggs are purchased and all payments made on the basis of quality. The quality system of buying eggs, wherever it has been given a fair trial, has resulted in increased returns to the producer,

and a larger margin of profit for the dealer without increasing the selling price to the consumer. A number of the more progressive egg buyers in Ohio are now buying eggs on a graded basis. Some dealers who have attempted to buy on a loss-off basis or on a basis of quality report that they have been compelled to abandon the practice, because of the opposition of the farmers. Instead of opposing the candling of their eggs and payment for them on the basis of their actual quality, egg producers should encourage the practice. In fact, they should insist on it. It is only when eggs are bought and sold on the basis of quality that the careful honest poultry producer will receive full value for the eggs which he sends to market.

Because of the variation in the demands of different markets, it is impossible to set any standard for eggs which will be entirely satisfactory in all markets or at all seasons of the year. The simple method of grading which is suggested in the following paragraphs, however, will serve as a satisfactory basis for payment in the producing districts. Only slight variations will be necessary to make this system of grading applicable to any market.

Eggs may be graded as *fancy*, *firsts*, *seconds*, *thirds*, *dirties*, and *checks*. Separate grades of fancy and firsts may be made for white and brown eggs. Seconds, thirds, dirties, and checks may be of mixed colors. The average farm has room for only one variety of chickens, therefore, there should be no occasion for separate color grades.

Fancy.—Fancy eggs must average 27 ounces to the dozen, no egg weighing less than 2 ounces or more than 2½ ounces. They must be absolutely clean and uniform in shape and color. White eggs must be a chalk white free from any tint. The shells must be strong and smooth, free from checks, ridges or excessive lime deposits. Only newly-laid eggs that are full, firm and free from foreign substances within the shell may be graded as fancy. Eggs which conform to this standard will meet the requirements of the best grade in any market.

A grade of fancy is advisable only where a large number of eggs are marketed or where eggs are sold directly to consumers who are willing to pay a premium for eggs of this quality sufficient to justify the extra care necessary in production, grading and marketing. Under average conditions, all eggs of fancy quality should be included with firsts.

Firsts.—Eggs which are clean, reasonably full, firm and sweet, weighing at least 2 ounces each, are graded as firsts. Greater evaporation is permitted than in a grade of fancy and the eggs are not so closely graded in regards to color. The appearance before the candle is

as described under "fresh egg" on page 6. Eggs of this quality should grade as firsts or better in any market. If the proper attention is given to the breeding and feeding of the fowls and care is exercised in the handling of the eggs, at least 75 percent of all the eggs marketed should grade as firsts or fancy.

Seconds.—Seconds must weigh at least 22 ounces to the dozen. They may be slightly shrunken and may show slight heat, but must be sweet and reasonably clean. The air space should not be larger than a quarter-dollar. Eggs weighing 2 ounces each or over, if slightly shrunken or soiled or of poor shape or color or slightly heated are graded as seconds.

Thirds.—Eggs that weigh less than 22 ounces to the dozen or larger eggs which are shrunken, heated or slightly dirty are graded as thirds.

Dirties.—Dirty eggs are graded as No. 1 and No. 2. A No. 1 dirty is an egg which is as good in size and quality as a first but dirty. A No. 2 dirty is an egg which is as good in quality as a second but dirty.

Checks.—An egg as good in quality as a first which is cracked but not leaking is graded as a No. 1 check. A No. 2 check is as good as a second, cracked but not leaking.

Where only a few eggs are marketed, checks and dirties are graded as thirds. The market always has an over-supply of eggs of these grades.

Loss.—All rotten eggs, stuck spots, moldy, blood-ringed and leaking eggs or eggs so dirty that they are unfit for food are a total loss. To sell such eggs is a violation of the pure food laws of Ohio.